

Knowledge, attitude and practices of teledentistry during the COVID-19 pandemic in Southern Saudi Arabia

Teledentistry during COVID-19 pandemic in Southern Saudi Arabia

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Abstract

Aim: The aim of this study was to assess the knowledge, attitudes and practice of teledentistry during COVID-19 among dentists in Southern Saudi Arabia.
Material and Methods: A questionnaire with 27 questions was constructed, validated and circulated electronically via social media channels like WhatsApp and by email to dentists from various fields in Southern Saudi Arabia. Data were collected and analyzed using the statistical software SPSS 23.0.
Results: Most of the respondents showed a positive behavior towards all domains of the questionnaire, including knowledge, attitude and practice of teledentistry. Out of 839 participants, 532 participants were familiar with this term, most of them (64.4%) were practicing it during the pandemic of COVID-19.
Discussion: It is an emerging technique that has the ability to improve the delivery of dental care diagnosis to communities with limited access or no access to specialists. As of today, there is a need for improvement in practicing it among the Saudi dental community.

Keywords

Telehealth, Teledentistry, COVID-19, Pandemic, Communication Technology, Information Technology

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Introduction

The field of dentistry, along with other disciplines of medicine, has faced significant challenges with the spread of viral diseases [1]. COVID-19 is caused by a virus known as SARS-CoV-2. The transmission method of this virus between people is mainly through contact routes and respiratory droplets [2]. Based on the available evidence, WHO has suggested strict droplet-preventive and contact measures for healthcare workers dealing with COVID-19 patients, and also aerosol-generating procedures are observed in clinical settings as airborne. Countries all over the world have affirmed states of emergency, which transformed the delivery of dental services. Since that time, various demonstration projects related to oral health have been using telehealth.

The term telehealth is given to those public health services and deliveries that use communication technology for diagnosis, self-care, to expedite consultation, planning and scheduling treatment by a healthcare worker for distant patients. Teledentistry, a branch of telehealth, provides dental care service at a distance with the help of communication and information technology. All professional and legal obligations and current dental practice related to in-clinic care are also mandatory for teledentistry [3].

It is a type of telehealth that is particularly allocated to dentistry and uses ICT (information and communication technology), electronic medical records, the internet and digital photography for consultation, continuing or supervision education. It has the potential to develop the delivery of oral healthcare and access to underserved and rural areas [4]. Teledentistry has the ability to minimize overall costs and save resources of healthcare [5]. According to an Australian study, if teledentistry were applied for screening the risk of low caries in children, it could save up to 40 million dollars/year [6]. In addition, the psychological effect of anxiety and fear, as well as non-essential contact, can be reduced for both patients and healthcare workers [7].

There is a limited amount of literature addressing the attitudes and awareness of dental professionals towards teledentistry and its use in healthcare provision. Therefore, the aim and objective of this survey were to investigate the knowledge, attitude and practice of teledentistry, as well as the practice of teledentistry during the COVID-19 pandemic among Saudi dentists. We are sure that this survey will add great information to the present literature, especially in Southern Saudi Arabia.

Material and Methods

After taking approval from the Scientific Research Ethical Committee of Najran University, a questionnaire for this cross-sectional research was shared with dentists including dental undergraduates, dental interns, dental postgraduates, general dental practitioners and specialists from October 2020 to December 2020. A total of 839 people related to dental fields from Southern Saudi Arabia participated in this survey. The respondents were given a brief introduction about the purpose of the survey in electronic format. Afterward, the questionnaire was sent to them using a convenient sampling technique e.g. through social media via emails and WhatsApp. Participants involved in the direct dental care of patients were included. A total of 27 multiple choice questions were asked in the four-

part survey; Part 1 included questions regarding demographic data; Part 2 included questions regarding knowledge of teledentistry; Part 3 included questions to assess attitudes towards teledentistry; Part 4 comprised questions about practicing it during COVID-19. The participants of the survey were questioned about their familiarity and attitude towards teledentistry and about practicing it in their dental practices. The dentists' responses were summarized in Tables.

Statistical Analysis

Responses of the participants were analyzed for frequency.

Results

Demographic data

A total of 839 people from different fields of dentistry participated in this survey. Out of 839 respondents, 437 (52.1%) were male and 402 (47.9%) were female. Their qualification differed: 244 (29.1%): dental undergraduate, 220 (26.2%): general dental practitioner, 178 (21.2%): dental interns, 125 (14.9%) dental postgraduate, and 72 (8.6%) were dental specialist; 463 (55.2%) participants were from Abha, 127 (15.1%) from Najran and 249 (29.7%) from Jazan (Table 1).

Knowledge about teledentistry

Five hundred thirty-two (63.4%) participants were familiar with the term teledentistry; 175 (20.9%) did not know it and 132 (15.7%) were not sure. Out of 664 respondents who knew teledentistry, only 248 selected Synchronous, Asynchronous, Mobile health, Remote patient monitoring as key modalities. Participants had different opinions on the use of teledentistry, as described in Table 1. Five hundred out of 664 thought that it was a technically difficult platform that required training and education. However, 61.6% understand that it can help in health education during and after the pandemic (Table 2a).

Attitude towards teledentistry

As compared to traditional examination, most people (289) thought that this technique is easier because it uses intraoral cameras, but is not accurate. One hundred forty-ninesaid it was neither easier nor accurate, and 226 participants found it easier and accurate. A large number of participants (50.9%) agreed that dentists are afraid of making inaccurate diagnosis through the use of teledentistry. The reasons for the lack of compatibility of healthcare professionals varied among the participants. Lack of training and expertise was the reason for 24.7% of participants, poor internet access for 37.5%, hardware shortage for 25.5 % and high cost for 12.3% of respondents; 59.5 % of participants agreed that teledentistry will increase the accessibility of specialists to rural and underserved communities. Four hundred dentists were ready to support a government initiative whereby patients could obtain advice via this technique (Table 2b).

Practice

Out of 664 participants, only 429 were seeing patients through teledentistry, of which 208, 84, 70 and 67 were using teleconsultation, telediagnosis, tele triage and tele monitoring respectively. The majority of participants (212) preferred telephone call and SMS; 56% found it very useful, however, some participants (20.8%) thought that it had too many legal issues, and 23.2% considered it limited. In the current pandemic situation, 375 dentists chose that the dental curriculum needs

an update regarding teledentistry; 394 thought that it has gained more importance in the current situation than before;

Table 1. Distribution of respondents with respect to their demographic data

	Response	Percent
Gender	Female	47.9
	Male	52.1
Qualification	Dental Undergraduate	29.1
	General Dental practitioner	26.2
	Dental Interns	21.2
	Dental Postgraduate	14.9
	Dental Specialist	8.6
Region	Abha	55.2
	Najran	15.1
	Jazan	29.7

Table 2. Distribution of respondents with respect to knowledge, attitude and practice of teledentistry

Questions	Chi-square	p-value
Knowledge		
Knowledge about teledentistry	10.08**	0.006
Key modalities of Teledentistry	9.36*	0.025
Used for patient examination	1.342NS	0.247
Used for continuing dental education	15.58**	0.000
Used for expert's opinion on patient's problem	16.01**	0.000
Used for easy consultation on oral disease with specialists	20.92**	0.000
Used for diagnosis and management of oral disease	20.03**	0.000
Used for improving access to oral health care	14.53**	0.000
Used for oral hygiene training	18.31**	0.000
It is a complex platform, needs training and education for dental professionals	0.658NS	0.417
It can help in the health education of masses over the internet during a pandemic and after	2.73NS	0.255
Attitude		
Via computers and intra oral cameras it makes dental examination ___as compared to radios in a traditional office setting	7.733*	0.021
Dentists are afraid of making inaccurate diagnosis over teleconsultation as compared to face to face consultation	26.09**	0.000
Lack of compatibility with Teledentistry of healthcare professionals is due to	11.74**	0.008
It will increase the accessibility of specialist to rural and underserved communities for their dental needs	0.492NS	0.782
Will you support a government initiative whereby patients could obtain advice on treatment needs from a central facility such as PHC?	0.733NS	0.693
Practice		
Are you currently seeing patients through Teledentistry?	7.663*	0.022
Subunit you practice the most	3.476NS	0.324
Platform you prefer for Teledentistry	7.784NS	0.051
Opinion about Teledentistry	1.041NS	0.594
Teledentistry as a novel tool can jeopardize	13.62**	0.002
Our dental curriculum needs updation regarding Teledentistry	0.015NS	0.902
Due to COVID 19, Teledentistry has gained importance than before	0.957NS	0.328
During pandemic of COVID 19, it can complement the existing compromised dental system	0.020NS	0.887

NS = Non-significant (P>0.05); * = Significant (P<0.05); ** = Highly significant (P<0.01)

417 participants understand that if not fully replaced, at least it can complement the existing compromised dental system (Table 2c).

Discussion

The concept of teledentistry was initially proposed by the American Army as part of the Total Dental Access Project in 1994. Nowadays, teledentistry is widely accepted in the fields of dental education, public awareness, and research activities within several dental disciplines. Teledentistry is an advanced technique for the delivery of health services that can help contact and triage patients, also facilitate discussion of the results of investigations and enable clinicians to give advice [8]. In the present study, 63.4% of the participants were familiar with it, which is higher than in the study by Almazrooa et al., which showed that 28.4% were familiar with the term teledentistry [9], and another study mentioned that only 7.23% of dentists know the concept of teledentistry, and the majority of respondents (98%) have never practiced it [10].

In the present study, most (56%) of the participants agreed that teledentistry is very useful, but 23.25% said it was very limited, and 20.8% thought it had too many legal issues, this number is quite higher than in the study by Boringi et al., in which only 4.19% of participants said that it had legal issues, and 28.13% of respondents believed it had limited application; and in the same survey, 50% agreed that it could help in health education of the masses [10]. The same results were found in the present study, in which the percentage of respondents was 61.6%.

The majority of respondents (59.9%) were sure that it will increase the accessibility of specialists to rural and underserved communities. A great number of dentists (67.6%) in a similar study also believed that it can be useful in improving access to oral health care [11].

In the present study, 62.8% of participants said that teledentistry could complement the existing compromised dental system, if not fully replaced during the COVID-19 pandemic. In this survey, 64.4% of dentists were practicing teledentistry, which is in accordance with a study by Almazrooa et al. that demonstrated that 50% of dentist had applied teledentistry in their clinical practice [9]. This method is ideal for limiting the movement of people in hospitals, because it prevents unnecessary contact of patients to asymptomatic carriers of COVID-19, including healthcare workers [12]. Adoption of telephonic consultations and virtual clinics in this pandemic situation will minimize the overcrowding of emergency rooms in hospitals and will also reduce unnecessary visits that increase the risk of disease transmission, and ultimately it prevent the shattering of healthcare systems [13].

Conclusion

Most of the participants were well aware about teledentistry and showed a positive attitude towards it. However, in terms of practicing it during this pandemic, further improvement is needed in dentists in Southern Saudi Arabia.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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